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EXAMINER	
MERED, HABTE	

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2474	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/814,853	LI ET AL.	
	Examiner	Art Unit	
	HABTE MERED	2474	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *27-31 and 33-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-31 and 33-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/09/2009 has been entered.

2. The amendment filed on 11/09/2009 has been fully considered.

3. Claims 1-26 were previously cancelled. Claims 27-31 and 33-47 are currently pending. The base independent claims are 27, 35, 40, and 44. Independent claims 27 and 35 are amended. Dependent claim 47 is new.

Response to Arguments

4. Applicant's arguments with respect to amended independent claims 27 and 35 have been considered but are moot in view of the new ground(s) of rejection as taught by Ogawa'308. A machine translation of Japanese Patent Application Number 2001-319308 is provided to disclose Ogawa'308's teachings. However Examiner suggests to

Applicant to refer to US Patent 7,423,961 B2 for ease of reading as the latter is the US application that matches the Japanese application.

5. Applicant's arguments filed on 11/9/09 have been fully considered but they are not persuasive with respect to independent claims 40 and 44.

6. In the Remarks, Applicant argues with respect to independent claims 40 and 44, that the primary reference, Perahia'718 fails to teach *"A method, comprising: receiving from multiple stations, at a wireless access point, a plurality of uplinked spatial division multiple access (SDMA) data streams that are out of synchronism by a time period greater than an allowed guard band time period;...".* Further Applicant contests that the support cited by Examiner from Perahia'718's disclosure including Column 5, Lines 1-5, Column 9, Lines 50-55, and Figs. 7 and 8 fail to disclose the recited limitation in question.

Examiner respectfully disagrees with Applicant's position. First it should be clear given Ogawa'308 teaching that receiving *data streams that are out of synchronism by a time period greater than an allowed guard band time period cannot be novel given Ogawa'308's Drawings 2, 4, and 5.*

Second there should be no question that indeed Perahia'718 in Figure 1 shows SCDMA Access Point 102 receiving uplink SDMA data streams from SDMA subscriber units 108 as detailed in Column 4, Line 66 to Column 5, Line 5. Hence receiving at the SCDMA Access Point 102 uplink SCDMA data streams from multiple stations is established in Perahia'718 disclosure.

The next question is can these streams be out of synch with respect to one another and the access point. The answer is a resounding yes because as detailed in Column 9, Lines 50-55 and shown in Figs. 7&8 the access point will not be wasting resources to synchronize the streams if they were not out of synch in the first place. This is further reiterated in Column 9, lines 30-35 with respect to the preambles of Figs 7&8 Perahia'718 partially stating "...access point acts as a timing master and that the subscriber units are timing slaves. Subscriber units can obtain frequency and timing synchronization based on the short symbol preambles...". Further Perahia'718 shows in Column 9, Lines 1-5 that the short symbol which is the guard band time period is 0.8 microsecond long and the system is primarily based on IEEE 802.11a which is identical to Applicant's system.

The last point is that given two clients uplink SCDMA streams can be out of synch as shown in Figure 6 with respect to clients 1 and 2 then can the time period of being out of synch be greater than the allowed guard band time period. Most definitely yes because given "the allowed guard band time period" value not being specifically claimed Perahia'718's system still reads on this aspect of the limitation in that the SCDMA Access Point 102 determines a given client 1 uplink SCDMA data stream is out of synch with respect to client 2 uplink SCDMA data stream if there is a variance in the start and arrival of the two streams as indicated in Column 7, Lines 14-25. It shows in Column 7, Lines 20-21 that the streams are synchronized to within a few hundred nanoseconds. Hence it is

clear from this discussion that Perahia'718's system clearly is capable of receiving upstream SCDMA streams that can be out of synch with one another greater than by a short symbol (0.8 microsecond) and can be eventually synchronized to within a few hundred nanoseconds.

Hence in conclusion the limitation in question cannot be novel as currently phrased in that any SCDMA system with an access point providing synchronization capability to the uplink SCDMA transmission from SCDMA subscribers will easily read on the limitation. Therefore Examiner will maintain the 103 rejections of all independent claims in view of the explanation presented above.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. **Claims 27-28, 31, 33-39, and 47** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa et al (Japanese Patent Application Number 2001-319308) in view of Shatil (US Pub No. 2004/0086027 A1) and Priotti (US Pub. No. 20040120410).

Regarding **claim 27**, Ogawa'308 discloses a method comprising:

computing, by a wireless access point **(Drawing 1 – base station 1000 paragraph 112)**, a channel response for each of a plurality of channels based on training signals **(See Drawing 3 – training signals paragraphs 14, 101, 105 and 115)** received over two or more antennas from multiple stations **(See Drawing 1 - antennas 1 to n)**;

receiving from multiple stations **(See paragraphs 20-24)** at the wireless access point a plurality of up linked spatial division multiple access (SDMA) data streams **(i.e. Drawing 2 SDMA Base Station receives uplink SDMA data streams from mobile elements)** that are out of synchronism by a time period greater than an allowed guard band time period **(i.e. delayed wave of desired signal is received and is distinguished as long or short delay based on guard band as shown in Drawings 4 and 5 – see paragraphs 124 and 139)**.

Ogawa'308 fails to expressively disclose converting the plurality of SDMA data streams from a first time domain to a frequency domain. However Ogawa'308 shows in Fig.1 that the received signal is converted into frequency domain in Drawings 1 and 11c.

Ogawa'308 also fails to discloses separating with a spatial de-mapper the plurality of SDMA data streams into a separated plurality of data streams in the frequency domain based on the channel response for each of the plurality of channels; converting the separated plurality of data streams from the frequency domain to a second time domain.

However, the above mentioned claimed limitations are well known in the art as evidenced by Shattil'027.

In particular, Shattil'027 discloses converting the plurality of SDMA data streams **(see paragraph 27 indicating the data streams can be SDMA based)** from a first time domain to a frequency domain **(In Figures 4J and 10B, the asynchronous signals Rx are directly fed to and FFT or DFT to convert each of the Rx asynchronous composite signals from time domain to frequency domain as further detailed in paragraphs 141 and 186)**;

separating the plurality of SDMA data streams with <u>a spatial de-mapper</u> **(see Fig. 2 element 225 and can be a spatial demapper if the signals are SDMA as suggested in paragraph 27)** into a separated plurality of data streams in the frequency domain **(In Figure 4J and 10B 1 ...M composite asynchronous Rx signals are separated into N data streams in the frequency domain and for further illustration see paragraphs 141,142, 186, and 187)** based on the channel response for each of the plurality of channels **(see paragraphs 191 and 192 for using channel response)**;

converting the separated plurality of data streams from the frequency domain to a second time domain **(it should be noted that Shattir027 teaches a second time domain as the output of Figure 4J's 462 is M data streams in the time domain as the combiners and integrators serve as an IFFT as illustrated in paragraphs 142 and 193).**

In view of the above, having the method of Ogawa'308 and then given the well established teaching of Shattil'027, it would have been obvious to one having ordinary

skill in the art at the time of the invention was made to modify the method of Ogawa'308 as taught by Shattil'027, since Shattil'027 clearly states in paragraphs 32 and 33 that the modification results in a CI transceiver that uses time domain signal shaping resulting in a peak to average power ratio.

Ogawa'308 also fails to disclose a method of synchronizing the separated plurality of data streams in the second time domain.

However, the above mentioned claimed limitations are well known in the art as evidenced by Priotti'410.

In particular, Priotti'410 discloses a method of synchronizing the separated pluralities of data streams in a second time domain **(See Paragraph 43 and Figure 1, element 116. It should be noted here that neither a receiver nor a transmitter is claimed and hence element 116 of Figure 1 can be considered a second time domain synchronization taking into consideration the first time domain conversion at the transmitter. Never the less, Priotti'410 clearly teaches synchronization in the second time domain in the receiver 106 of the wireless system of Figure 1. The first time synchronization occurs in element 116 of Figure 1. The second time synchronization occurs in the second time domain in Figure 1, element 130. See paragraphs 52, 142, and 193).**

In view of the above, having the method of Ogawa'308 and then given the well established teaching of Priotti'410, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method of Ogawa'308 as taught by Priotti'410, since Priotti'410 clearly states in paragraph 8, Lines 1-5 that

such a modification will allow post-FFT correction of fine frequency offset providing a much more accurate and enhanced synchronization at the receiver.

Regarding **claim 28**, the combination of Ogawa'308, Shattil'027, and Priotti'410 disclose a method wherein the receiving comprises: receiving at least some of the plurality of SDMA data streams as data streams that include a plurality of non-aligned orthogonal frequency division multiplexed symbols **(See Shattil'027 paragraph 213 received OFDM symbols can be non-aligned requiring synchronization at the receiver)**.

Regarding **claim 31**, the combination of Ogawa'308, Shattil'027, and Priotti'410 disclose a method, wherein the separating comprises: separating the plurality of SDMA data streams using a channel matrix **(See Shattil'027's Figure 5B, 6B, and 11 and paragraphs 145 and 156)**.

Regarding **claim 33**, the combination of Ogawa'308, Shattil'027, and Priotti'410 disclose a method wherein the separating comprises: separating the plurality of SDMA data streams into a separated plurality of data streams, wherein at least some of the separated plurality of data streams have different frequency offsets **(Shattil'027 shows in Fig 3E different frequency offsets and besides if the signals did not have frequency offsets then it will be hard to distinguish them in the frequency domain)**.

Regarding **claim 34**, the combination of Ogawa'308, Shattil'027, and Priotti'410 disclose a method wherein a number of the separated plurality of data

streams correspond to a like number of wireless channels **(Shattil'027 shows in paragraph 37 that the wireless channel is shared and divided in sub-carrier or sub-channel using OFDM/SDMA techniques)**.

Regarding **claim 35**, Ogawa'308 discloses an article comprising a memory has instructions stored thereon, wherein the instructions, when executed, cause the processor to perform:

computing, by a wireless access point **(Drawing 1 – base station 1000 paragraph 112)**, a channel response for each of a plurality of channels based on training signals **(See Drawing 3 – training signals paragraphs 14, 101, 105 and 115)** received over two or more antennas from multiple stations **(See Drawing 1 - antennas 1 to n)**;

converting a plurality of spatial division multiple access (SDMA) data streams **(i.e. Drawing 2 SDMA Base Station receives uplink SDMA data streams from mobile elements)** from a first time domain **(note when received at the base station of drawing 2 it is in first time domain as it comes out from the mobiles)** to a frequency domain **(i.e. Drawing 2 FFT units 1020 output is frequency domain)** after the plurality of SDMA data streams have been received as a plurality of uplinked SDMA data streams **(See paragraphs 20-24)** that are out of synchronism by a time period greater than an allowed guard band time period **(i.e. delayed wave of desired signal is received and is distinguished as long or short delay based on guard band as shown in Drawings 4 and 5 – see paragraphs 124 and 139)**.

Ogawa'308 fails to expressively disclose separating the plurality of SDMA data streams into a separated plurality of data streams in the frequency domain <u>based on the channel response for each of the plurality of channels</u>. However Ogawa'308 shows such a functionality in Drawing 1.

Ogawa'308 also fails to disclose converting the separated plurality of data streams from the frequency domain to a second time domain.

However, the above mentioned claimed limitations are well known in the art as evidenced by Shattil'027.

In particular, Shattil'027 discloses separating the plurality of SDMA data streams into a separated plurality of data streams in the frequency domain**(i.e. Figure 10B DFT 1071 or Figure 4J FFT 472 separate SDMA data streams into plurality of streams in the frequency domain - see paragraphs 141,142, 186, and 187)** based on the channel response for each of the plurality of channels **(see paragraphs 191 and 192 for using channel response).**;

converting the separated plurality of data streams from the frequency domain to a second time domain **(it should be noted that Shattir027 teaches a second time domain as the output of Figure 4J's 462 is M data streams in the time domain as the combiners and integrators serve as an IFFT as illustrated in paragraphs 142 and 193)**.

In view of the above, having the article of Ogawa'308 and then given the well established teaching of Shattil'027, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the article of Perahia'718

as taught by Shattil'027, since Shattil'027 clearly states in paragraphs 32 and 33 that the modification results in a CI transceiver that uses time domain signal shaping resulting in a peak to average power ratio.

Ogawa'308 also fails to disclose synchronizing the separated plurality of data streams in the second time domain.

However, the above mentioned claimed limitations are well known in the art as evidenced by Priotti'410.

In particular, Priotti'410 discloses synchronizing the separated pluralities of data streams in a second time domain **(See Paragraph 43 and Figure 1, element 116. It should be noted here that neither a receiver nor a transmitter is claimed and hence element 116 of Figure 1 can be considered a second time domain synchronization taking into consideration the first time domain conversion at the transmitter. Never the less, Priotti'410 clearly teaches synchronization in the second time domain in the receiver 106 of the wireless system of Figure 1. The first time synchronization occurs in element 116 of Figure 1. The second time synchronization occurs in the second time domain in Figure 1, element 130. See paragraphs 52, 142, and 193).**

In view of the above, having the article of Ogawa'308 and then given the well established teaching of Priotti'410, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the article of Ogawa'308 as taught by Priotti'410, since Priotti'410 clearly states in paragraph 8, Lines 1-5 that

such a modification will allow post-FFT correction of fine frequency offset providing a much more accurate and enhanced synchronization at the receiver.

Regarding **claim 36**, Ogawa'308 discloses an article, wherein the separating comprises: separating the plurality of SDMA data streams at a wireless access point **(See Drawing 1, Base Station and the BS as a receiver in Drawing 2 and In Drawing 1 separating the SDMA data streams)**.

Regarding **claim 37**, the combination of Ogawa'308, Shattil'027, and Priotti'410 discloses an article wherein the instructions, when executed, cause the processor to perform: computing a frequency response for a plurality of channels corresponding in number to a number of the plurality of SDMA data streams **(See Shattil'027 paragraph 192 calculation of the channel response for the nth frequency channel)**.

Regarding **claim 38**, the combination of Ogawa'308, Shattil'027, and Priotti'410 discloses an article, wherein the synchronizing comprises: synchronizing at least one of the separated plurality of data streams after detecting a boundary between preambles. **(See Ogawa'308 Fig. 5 alignment method).**

Regarding **claim 39**, the combination of Ogawa'308, Shattil'027, and Priotti'410 discloses an article, wherein the instructions, when executed, cause the processor to perform: estimating a coarse frequency offset between receiver and transmitter oscillator clocks **(Priotti'410 in paragraph 64 teaches large or coarse frequency**

offset estimation and in paragraph 65 it teaches smooth frequency offset estimation).

Regarding **claim 47**, the combination of Ogawa'308, Shattil'027, and Priotti'410 disclose a method, wherein at least two of the plurality of uplinked SDMA data streams are out of synchronism greater than 0.8 microseconds. **(See Ogawa'308 in Drawings 2, 4-5 showing receiving within and outside guard band and Priotti'410 discloses the guard band for 802.11a/SDMA system is 0.8 microsecond in paragraph 60).**

9. **Claims 29 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa'308 in view of Shattil'027 and Priotti'410 as applied to claim 27 above, and further in view of Perahia et al (US 7, 352, 718 B1).

Regarding **claim 29**, the combination of Ogawa'308, Shattil'027 and Priotti'410 fails to disclose a method wherein the receiving comprises: receiving the plurality of SDMA data streams in response to a polling communication.

Perahia'718 discloses a method wherein the receiving comprises: receiving the plurality of SDMA data streams in response to a polling communication. **(See Perahia'718 Column 3, Lines 25-30)**.

In view of the above, having the method based on the combination of Ogawa'308, Shattil'027 and Priotti'410 and then given the well established teaching of Perahia'718, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the method based on the combination of

Ogawa'308, Shattil'027 and Priotti'410 as taught by Perahia'718, since Perahia'718 clearly states in Column 2, Lines 10-15 that the modification results in allowing for simultaneous transmissions by multiple users and increased system capacity.

Regarding **claim 30**, the combination of Ogawa'308, Shattil'027, Priotti'410 and Perahia'718 discloses a method wherein the polling communication comprises multiple polling messages overlapping in time and corresponding in number to the multiple stations **(See Perahia'718 Column 7, Lines 13-23 and Fig. 6 showing multiple polling messages to multiple stations in overlapping time eventually leading to failure of packet reception)**.

10. **Claims 40 and 42-46** are rejected under 35 U.S.C.103(a) as being unpatentable over Perahia'718 in view of Shattil'027 and Priotti'410.

Regarding **claim 40**, Perahia'718 discloses an apparatus **(i.e. Figure 1, element 102 - SDMA AP)** wherein the plurality of SDMA data streams **(i.e. sourced by Figure 1, elements 104 SDMA stations)** have been received as a plurality of uplinked SDMA data streams **(i.e. Fig. 1 SDMA AP 102 receives uplink SDMA data streams from elements 104 as detailed in Column 5, Lines 1-5)** that are out of synchronism by a time period greater than an allowed guard band time period **(i.e. the allowed guard band time is shown in Figs. 7 &8 and shows in Column 9, Lines 50-55 that the**

uplink transmission can be out of synch which has to exceed the guard band time).

Perahia'718 fails to disclose an apparatus including a separation module to separate a plurality of spatial division multiple access (SDMA) data streams into a plurality of separated data streams, in a frequency domain, after the plurality of SDMA data streams have been converted from a first time domain to the frequency domain.

However, the above mentioned claimed limitations are well known in the art as evidenced by Shattil'027.

In particular, Shattil'027 discloses an apparatus including a separation module **(i.e. Figure 10B DFT 1071 or Figure 4J FFT 472)** to separate a plurality of spatial division multiple access (SDMA) data streams into a plurality of separated data streams, in a frequency domain, after the plurality of SDMA data streams have been converted from a first time domain to the frequency domain. **(In Figures 4J and 10B, the asynchronous signals Rx are directly fed to and FFT or DFT to convert each of the Rx asynchronous composite signals from time domain to frequency domain as further detailed in paragraphs 141, 142, 186 and 187)**

In view of the above, having the apparatus of Perahia'718 and then given the well established teaching of Shattil'027, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the apparatus of Perahia'718 as taught by Shattil'027, since Shattil'027 clearly states in paragraphs 32 and 33 that the modification results in a CI transceiver that uses time domain signal shaping resulting in a peak to average power ratio.

Perahia'718 also fails to disclose a synchronization module to synchronize the separated plurality of data streams in a second time domain after the separated plurality of data streams have been converted from the frequency domain to the second time domain.

However, the above mentioned claimed limitations are well known in the art as evidenced by Priotti'410. In particular, Priotti'410 discloses a synchronization module to synchronize the separated plurality of data streams in a second time domain after the separated plurality of data streams have been converted from the frequency domain to the second time domain. **(See Paragraph 43 and Figure 1, element 116. It should be noted here that neither a receiver nor a transmitter is claimed and hence element 116 of Figure 1 can be considered a second time domain synchronization taking into consideration the first time domain conversion at the transmitter. Never the less, Priotti'410 clearly teaches synchronization in the second time domain in the receiver 106 of the wireless system of Figure 1. The first time synchronization occurs in element 116 of Figure 1. The second time synchronization occurs in the second time domain in Figure 1, element 130. See paragraphs 52, 142, and 193).**

In view of the above, having the apparatus of Perahia'718 and then given the well established teaching of Priotti'410, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the apparatus of Perahia'718 as taught by Priotti'410, since Priotti'410 clearly states in paragraph 8, Lines 1-5 that such a modification will allow post-FFT correction of fine frequency offset providing a much more accurate and enhanced synchronization at the receiver.

Regarding **claim 42**, the combination of Perahia'718, Shattil'027, and Priotti'410 discloses an apparatus, wherein the separation module comprises: a module to perform a fast Fourier transform on the plurality of SDMA data streams **(See Shattil'027 Figure 4J FFT 472).**

Regarding **claim 43,** the combination of Perahia'718, Shattil'027, and Priotti'410 discloses an apparatus, wherein the separation module comprises: a module to perform an inverse fast Fourier transform on at least one of the separated plurality of data streams **(See Shattil'027 Figure 11 element 1106 is an IFFT).**

Regarding **claim 44**, Perahia'718 discloses a system **(i.e. Figure 1, element 102 - SDMA AP)** wherein the plurality of SDMA data streams **(i.e. sourced by Figure 1, elements 104 SDMA stations)** have been received as a plurality of uplinked SDMA data streams **(i.e. Fig. 1 SDMA AP 102 receives uplink SDMA data streams from elements 104 as detailed in Column 5, Lines 1-5)** that are out of synchronism by a time period greater than an allowed guard band time period **(i.e. the allowed guard band time is shown in Figs. 7 &8 and shows in Column 9, Lines 50-55 that the uplink transmission can be out of synch which has to exceed the guard band time)**; and

a wireless access point **(See Figure 2, element 102)** coupled to a plurality of antennas to receive the plurality of SDMA data streams **(See Column 5, Lines 1-5)**.

Perahia'718 fails to disclose a system including a separation module to separate a plurality of spatial division multiple access (SDMA) data streams into a plurality of

separated data streams, in a frequency domain, after the plurality of SDMA data streams have been converted from a first time domain to the frequency domain.

However, the above mentioned claimed limitations are well known in the art as evidenced by Shattil'027. In particular, Shattil'027 discloses a system including a separation module **(i.e. Figure 10B DFT 1071 or Figure 4J FFT 472)** to separate a plurality of spatial division multiple access (SDMA) data streams into a plurality of separated data streams, in a frequency domain, after the plurality of SDMA data streams have been converted from a first time domain to the frequency domain. **(In Figures 4J and 10B, the asynchronous signals Rx are directly fed to and FFT or DFT to convert each of the Rx asynchronous composite signals from time domain to frequency domain as further detailed in paragraphs 141, 142, 186 and 187)**

In view of the above, having the system of Perahia'718 and then given the well established teaching of Shattil'027, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Perahia'718 as taught by Shattil'027, since Shattil'027 clearly states in paragraphs 32 and 33 that the modification results in a CI transceiver that uses time domain signal shaping resulting in a peak to average power ratio.

Perahia'718 also fails to disclose a synchronization module to synchronize the separated plurality of data streams in a second time domain after the separated plurality of data streams have been converted from the frequency domain to the second time domain.

However, the above mentioned claimed limitations are well known in the art as evidenced by Priotti'410. In particular, Priotti'410 discloses a synchronization module to synchronize the separated plurality of data streams in a second time domain after the separated plurality of data streams have been converted from the frequency domain to the second time domain. **(See Paragraph 43 and Figure 1, element 116. It should be noted here that neither a receiver nor a transmitter is claimed and hence element 116 of Figure 1 can be considered a second time domain synchronization taking into consideration the first time domain conversion at the transmitter. Never the less, Priotti'410 clearly teaches synchronization in the second time domain in the receiver 106 of the wireless system of Figure 1. The first time synchronization occurs in element 116 of Figure 1. The second time synchronization occurs in the second time domain in Figure 1, element 130. See paragraphs 52, 142, and 193).**

In view of the above, having the system of Perahia'718 and then given the well established teaching of Priotti'410, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the system of Perahia'718 as taught by Priotti'410, since Priotti'410 clearly states in paragraph 8, Lines 1-5 that such a modification will allow post-FFT correction of fine frequency offset providing a much more accurate and enhanced synchronization at the receiver.

Regarding **claim 45**, the combination of Perahia'718, Shattil'027, and Priotti'410 disclose a system, wherein the separating comprises: separating the plurality of SDMA data streams using a channel matrix **(See Shattil'027's Figure 5B, 6B, and 11 and paragraphs 145 and 156)**.

Regarding **claim 46**, the combination of Perahia'718, Shattil'027 and Priotti'410 disclose a system wherein the wireless access point is to train at least one channel for at least some of a plurality of stations associated with the plurality of SDMA data streams (See in Shattil'027 the training sequence in paragraph 55)

11. **Claim 41** is rejected under 35 U.S.C. 103(a) as being unpatentable over Perahia'718 in view of Shattil'027 and Priotti'410 as applied to claims 27 and 40 above respectively, and further in view of Shatil (US Pub.No. 2002/0150070 A1).

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Regarding **claim 41**, the combination of Perahia'718, Shattil'027 and Priotti'410 fails to disclose an apparatus where the separation module comprises: a spatial demultiplexer to provide the separated plurality of data streams.

However, the above mentioned claimed limitations are well known in the art as evidenced by Shattil'897. In particular, Shattil'897 discloses an apparatus where the separation module comprises: a spatial demultiplexer **(Figure 2, element 206)** to provide the separated plurality of data streams **(Figure 2, element 206 is a frequency demapper and see also paragraphs 50 and 53 detailing how Figure 2, element 206 serves as a spatial demux)**.

In view of the above, having the apparatus based on the combination of Perahia'718, Shattil'027 and Priotti'410 and then given the well established teaching of Shattil'070, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the apparatus based on the combination of

Perahia'718, Shattil'027 and Priotti'410 as taught by Shattil'070, since Shattil'070 clearly states in paragraph 50, that the use a spatial demultiplexer is to separate a particular signal from the interfering N-1 signals in the frequency domain.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HABTE MERED whose telephone number is (571)272-6046. The examiner can normally be reached on Monday to Friday 10:30AM to 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung S. Moe can be reached on 571 272 7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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